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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			PHAM, HAI CHI	
			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 11/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/665,287

Applicant(s)

KUBO, NOBUAKI

Examiner

Hai C Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Election Response filed 09/20/04.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) 1-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15, 17, 18, 23, 25-27 and 29-49 is/are rejected.
- 7) ☒ Claim(s) 16, 19-22, 24 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 02/12/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION***Election/Restrictions***

1. Applicant's election with traverse of Species II in the reply filed on 09/20/04 is acknowledged. The traversal is on the grounds that "a search and examination of the entire application would not place a serious burden on the Examiner". This is not found persuasive because the claims related to Species I are directed to "a shape maintaining means for preventing or reducing deformation of a resin-made optical element includes in the scanning imaging optical system" wherein a gap is maintained equal or smaller than the thickness of the resin-made optical element (a claimed feature not required in Species II). Furthermore, although the scanning line curve correcting means and the scanning line inclination correcting means are also claimed, those correcting means are mainly performed because the change of the environment, e.g., temperature, which changes the shape of the resin-made optical element in contrast to the claims related to Species II where the scanning line curve and inclination are corrected such that the scanning lines of different colors are registered. Moreover, Species I requires the correction of the scanning line curve and inclination be performed by controlling the liquid crystal deflection means instead of using a mechanical device such as adjusting screws or actuator as required by the selected Species II.

The requirement is still deemed proper and is therefore made FINAL.

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2. Claims 1 through 11 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Species I, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 09/20/04.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

4. The information disclosure statements filed 02/12/04, 08/06/04, 08/20/04 and 10/15/04 provide lists of related applications submitted for consideration by the Office. They have been placed in the application file. The information referred to has been considered by the examiner.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

6. Claims 25, 43-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25:

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- Line 2, "the pressing means" clearly lacks antecedent basis.

Claim 43:

- Line 3, the phrase "and/or" renders the claim indefinite because the claim does not clearly set forth the metes and bounds of the claimed invention, thereby rendering the scope of the claim unascertainable.

Claim 44:

- Line 3, the phrase "and/or" renders the claim indefinite because the claim does not clearly set forth the metes and bounds of the claimed invention, thereby rendering the scope of the claim unascertainable.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000.

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Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

8. Claims 12-15, 18, 23, 26-27, 29-34, 39-40, 43, 45-49 are rejected under 35 U.S.C. 102(e) as being anticipated by Toda (Pub. No. U.S. 2001/0017645).

Toda discloses an image forming apparatus including a light scanning device, which comprises an optical element (optical imaging system including f- θ lens 44 and cylindrical mirror 48) that images, on an image holding body (photoreceptor drum 18), a light beam emitted from a light source (LD 36), a holding member (holder 76) that holds the optical element, scanning line curve correcting means (scanning line bent adjusting unit) (Fig. 8B) for correcting the optical element in a sub scanning direction to correct a scanning line in the sub scanning direction, the scanning line being formed by the light beam, and scanning line inclination correcting means (scanning line inclination adjusting unit) (Fig. 8A) for entirely tilting the optical element to correct an inclination of the scanning line (the cylindrical mirror 48 being pressed at one end by the adjusting screw 90 such that the entire cylindrical mirror is tilted toward the sub-scanning directing), wherein at least one part of the scanning line curve correcting means, and at least one part of the scanning line inclination correcting means are provided integrally with the holding member (the two scanning line inclination and bent adjusting units being an integral part of the assembly as shown in Fig. 6).

Toda further teaches:

- the holding member includes a reference surface that contacts with the optical element (as defined by the upper surface of the cylindrical mirror 48 facing the

frame 70 of the holder 76), and that provides a position reference for the optical element in the holding member, and the holding member further includes a supporting member that is long in a main scanning direction (blocks 72 and 74 and cover 50), and that supports the optical element from the sub scanning direction,

- the reference surface is formed at a part that does, not correspond to both end parts of the optical element,
- a single number of the pressing means (single screw 92) located at the center of the optical element,
- pressing means (screw 92) for pressing the optical element from an opposite of the surface of the optical element that contacts with the supporting member,
- the pressing means includes a screw (92) that is moved relative to the optical element in a direction including the sub scanning direction,
- The scanning line inclination correcting means entirely tilts the holding member (76) together with the optical element (48) to correct the inclination of the scanning line (Fig. 6),
- The scanning line inclination correcting means includes a supporting point member (using steel ball 78) (Fig. 7) that provides a supporting point when the scanning line inclination correcting means tilts the holding member,
- independently of each other, the scanning line curve correcting means and the scanning line inclination correcting means correct the scanning line (via separate adjusting screws 92 and 90, respectively) (Fig. 6),

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- the light scanning device is used for scanning a plurality of the image holding bodies (photoreceptor drums 18K, 18Y, 18M, 18C) by the light beams (LDs 36K, 36Y, 36M, 36C) (Figs. 1 and 2),
- the plurality of image holding bodies are provided for forming toner images of colors that are different from each other (colors KYMC),
- the scanning line curve correcting means and the scanning line inclination correcting means correct at least one beam of the beams corresponding to the plurality of image holding bodies, respectively (Fig. 1, 2),
- one of colors corresponding to the plurality of photoconductive bodies, respectively is set as a standard color (color black), and the scanning line curve correcting means and the scanning line inclination correcting means perform correcting to conform, to the scanning line of the standard color, the scanning lines corresponding to the colors other than the standard color (paragraphs [0134]),
- The standard color is black [or magenta],
- a fixed member (support member 86) that supports the holding member such that the holding member is movable in a direction of correcting the inclination of the scanning line, wherein the scanning line inclination correcting means comprises an elastic member (plate spring 88) that is provided integrally with the holding member and the fixed member, and that supports the holding member such that the holding member is movable relative to the fixed member in the direction of correcting the inclination of the scanning line, and holding member

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tilting means (adjusting screw 90) for tilting the holding member against force generated from the elastic member,

- the holding member tilting means includes a screw (screw 90),
- the elastic member includes a leaf spring and/or a coil spring (plate spring 86).

The method claims 45-48 are deemed to be clearly anticipated by functions of the above structures.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 41, 42, 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toda in view of Yokoyama (Pub. No. U.S. 2004/0041992).

Toda further suggests using an actuator as a driving means for driving the holding member to be tilted so as to automatically or periodically correct the scanning line inclination (paragraph [0033]) but fails to disclose the inclination detection means for controlling the scanning line inclination.

Yokoyama discloses an image forming apparatus including a light scanning device, which comprises an optical element (imaging lenses 69, Fig. 7A) and that images, on an image holding body (drum 1), a light beam (L1) emitted from a light source, and a scanning line inclination correcting means (Figs. 7A-7C) for entirely tilting

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the optical element to correct an inclination of the scanning line, an inclination detection means (position information measuring means –not shown-) for measuring an amount of position displacement from an ideal position (paragraph [0081]) such that an electrically controllable actuator can operated to adjust the scanning line inclination (paragraph [0088]).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the position information measuring means as taught by Yokoyama to operate along with the actuator in the device of Toda such that the Toda-suggested automatic scanning line inclination adjusting mechanism can be performed.

11. Claims 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toda in view of Azumai et al. (U.S. 6,320,682).

Toda further discloses a position displacement detection means for detecting a writing start position displacement in the sub scanning direction that is relative amount between the plurality of image holding bodies, wherein feedback control of the writing start position adjusting means is performed based on the writing start position displacement detected by the position displacement detection means (paragraphs [0097]-[0101]), but fails to teach the rotating optical path refracting member, the optical path refracting member including a wedge-shaped prism.

Azumai et al. discloses an image forming apparatus including an optical path refracting member in the form of a wedge-shaped prism (315) including a rotating

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mechanism for rotating the prism in finely adjusting the scanning positions of the laser beam in the sub-scanning direction (col. 6, lines 30-63) (Fig. 4).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide a rotating optical path refracting member in the form of a wedge-shaped prism as taught by Azumai et al. in the device of Toda. The motivation for doing so would have been to correct the positional deviation of the laser beam in the sub-scanning direction with a simple configuration and without having to cope with the phase deviation of the polygon mirror as suggested by Azumai et al.

12. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toda in view of Kanehashi (JP 11-231240).

Toda discloses all the basic limitations of the claimed invention except for the a plurality of the pressing means.

Kanehashi discloses an optical scanner including a mechanism for adjusting a scanning line bow having a plurality of adjusting screws (48) disposed along the longitudinal direction of the mirror (23) such that the curve of the scanning line of different shapes can be finely adjusted (Fig. 6).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide a plurality of adjusting screws as taught by Kanehashi in the device of Toda. The motivation for doing so would have been to be capable of adjusting the scanning line bow of different shapes.

Allowable Subject Matter

13. Claims 16, 19-22, 24-25 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. Claim 25 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter: the primary reason for the indication of the allowability of claim 16 is the inclusion therein, in combination as currently claimed, of the limitation "wherein the reference surface is formed at a position that does not correspond to a position where the pressing means presses the optical element", which is not found taught the prior art of record considered alone or in combination.

The primary reason for the indication of the allowability of claim 19 is the inclusion therein, in combination as currently claimed, of the limitations "a pressing member that engages the optical element from the opposite side of the surface of the optical element that contacts with the supporting member" and "a pressing operation member that pushes the pressing member against the optical element", which are not found taught the prior art of record considered alone or in combination.

The primary reason for the indication of the allowability of claim 24 is the inclusion therein, in combination as currently claimed, of the limitation "wherein the holding member comprises a sandwiching support member that is positioned at an

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opposite side of the surface of the optical element contacting with the supporting member, and that sandwiches and supports the optical element in cooperation with the supporting member", which is not found taught the prior art of record considered alone or in combination.

The primary reason for the indication of the allowability of claim 28 is the inclusion therein, in combination as currently claimed, of the limitation "the supporting point is positioned near the optical axis of the optical element", which is not found taught the prior art of record considered alone or in combination.

Claims 20-22 are allowable because they are dependent to claim 19 above.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L Talbott can be reached on (571) 272-1934. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HAI PHAM
PRIMARY EXAMINER

November 18, 2004